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THE PLANNED DEVELOPMENT OF HUMAN RESOURCES

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THE PLANNED DEVELOPMENT OF HUMAN RESOURCES

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B.2.1.

1. The purpose of this paper is to stress the importance which the planned development of human resources now has for developing countries, by providing them with rational criteria on which to base a policy for developing human resources that can be integrated in economic development planning. Recent developments in theory and practice have shown that planning methods can to a large extent be applied to these problems; other branches of social sciences (education, sociology) or even specialised branches of these sciences (employment, productivity) can also play their part in the rapid promotion of knowledge and possible lines of action in this field. It would be possible to take steps which would be both simple and inexpensive to complete the statistical picture. Concerted international action along specific lines of research having immediate priority would yield speedy and effective results.

2. Importance of human factors

It is well known that the economic development policies of all states have similar aims (per capita income growth) and are based on relatively similar techniques of economic forecasting, that is, of programming or planning. While their efficacy is generally acknowledged, it is a known fact that, since these techniques have been developed and applied in industrialised countries, particular difficulties are encountered in applying them in developing countries, arising mainly from the specific social problems of such countries. Hence, the importance of the contribution which can be made by social sciences to the awareness of these problems.

In an initial phase these various sciences attempted, each from its own approach, to describe and analyse the various characteristics of underdevelopment. It appears that a new phase has now been reached in which underdevelopment, considered as a widespread phenomenon, can be tackled on a basis of mutual co-operation between these various sciences. The unprecedented, world-wide extent of underdevelopment problems requires, moreover, this kind of collaboration between men of action and those engaged in research if national and international decisions relating to action for rapid development are to acquire a greater degree of rationalisation.

3. Education

One of the major objectives in the social field is the development of education - not only because the right to education is set forth in the International Declaration of Human Rights or because education is a prerequisite for all individual advancement but also because it is an essential condition for social, political and economic development. Education is the most powerful means of integrating a limited group into the national community, the modern state and the monetary economy. No progress in means of communication and information can bring about rational conduct on the part of citizens, producers and consumers as effectually as education. Large-scale regional programmes have been undertaken to provide education to all young persons within the next ten or twenty years. The magnitude of the means for carrying this out tends to generalise the manner in which educational plans are drawn up. Although the methods differ from one country to the next, in all cases they consist in specifying the necessary staff and credit means for providing education to the number of pupils envisaged for the period in question. These objectives, however, are established in relation to social objectives such as the providing of primary education to the whole population, the doubling of the number of pupils who are given secondary or higher education, and so forth; economic factors play a part only in that phase of financing when care is taken to ensure that the objectives pursued are compatible with the available financial resources, both as regards the initial outlay and the yearly operational costs. From this approach, however, the amounts devoted to education for social or political reasons proportionately reduce the resources available for infrastructure or productive investments. It is for this reason that endeavours are made at present to show that the costs of training men must be considered as a productive investment. Recent studies on economic growth have brought to light the existence of a "third factor", as important as labour and capital, which has to do with educational improvement, vocational training, management, educational environment, etc.

Investigations carried out in the United States have demonstrated the "return" on education by comparing the wage differentials of individuals with the direct or indirect costs of their education. But at the macro-economic level it should be possible to measure the social return on total educational expenditures, something which has not yet been possible to estimate.

4. Manpower training

Another basic problem is the shortage of trained manpower at all levels: workers, foremen, technicians and engineers as well as top and middle management. No longer are low wages considered to be a factor that encourages production and attracts foreign capital; on the contrary, it has become evident that the training of workers is a decisive condition for producing returns on investments and increasing productivity. A country's capacity for absorbing capital is probably limited mainly by the level of manpower training. Many examples in history point

to the relationship between this factor and economic growth.

Considerable efforts have been undertaken at the national and international levels to increase the means of training skilled labour. Many new technical training establishments, vocational training centres and technical co-operation courses have been set up. Moreover, surveys have been carried out with a view to assessing quantitative requirements in terms of workers, technicians and engineers. However, a difficult choice is presented between two possibilities: either fast training for turning out highly specialised workers or long-term instruction for training workers capable of performing a number of functions. This problem often arises in an acute form owing to the fact that these two types of training come under different ministries or, at the international level, under different organisations. Decisions are taken on a practical basis: in certain countries vocational training centres are given the objective of training the skilled workers whom technical training institutes are unable to admit owing to lack of space; at times one type of training is systematically developed to the detriment of the other. In order to overcome rivalry of this sort it would be necessary to place this teaching problem in the broader context of the economy's needs in terms of labour and the kinds of skills required.

Another difficulty as regards the training of skilled labour has to do with recruitment. In many countries the prestige involved in a general education, which leads more readily to higher education and administrative or managerial posts in the government, politics or the private sector, turns the most gifted youth away from technical and vocational training and, at times, even from scientific studies. This problem can only be solved within the framework of a national policy of education which establishes the relationship between the various grades and branches of education in terms of the needs involved in development. To give priority to the establishment of technical or vocational training institutes or to assess requirements in terms of workers or engineers can lead only to a partial and insufficient approach. The example of certain countries shows that the output of personnel provided by technical establishments whose cost is extremely high may be insufficient in quality and quantity at the same time that many graduates of secondary and higher schools are unemployed. Moreover, a country's development cannot be based solely on the growth of the manufacturing industries any more than the aim of education can be limited to training industrial workers. The satisfactory operation of government machinery and political institutions, the development of the infrastructure and the commercial network, the improvement of agriculture are complementary aspects and all depend to a large extent on the training of middle and senior supervisory staff. It is therefore impossible to separate a field of education or the educational system from social and economic aspects.

5. Full employment

A third main problem concerns employment. A shortage of skilled labour causes considerable unemployment in towns and,

although more difficult to assess, even more widespread under-employment in the country. This situation becomes more serious each year due to the growth in the population. The extent of this problem becomes clear when the probable increase in the labour force is compared to the number of new jobs provided for in economic plans. In industrial countries the goal of full employment can be included in economic policies, for example by bringing direct or indirect pressure to bear on the volume of investments. In developing countries, however, the volume of investments is limited to a much greater extent. On estimating the amount of investments required for creating new jobs in industry or agriculture, it appears impossible to absorb existing unemployment and under-employment or even to check their growth. Drift from the land takes place at a fast pace owing to social and economic pressures and causes the urban population to grow at a faster rate than labour demand in industry or services; nevertheless the number of rural workers continues to increase, bringing about lower production per head in agriculture.

The "shadow price" method which takes account of the over-estimate of wage rates and the shortage of capital, or the method which gives preference to expenditures in local currency, are useful; however, the point is to provide a corrective to the economic estimate rather than include therein an objective of full employment.

With respect to the "timely costs" method, this makes it possible only to compare social costs, such as those of education, with productive investments which it is necessary to forego.

On the other hand, the experience of community development and human resources designed to mobilise under-employed labour for jobs requiring limited capital investment is based on social objectives but eludes economic estimates and is thus prevented from being situated in a rational manner within development planning.

6. The relationship between the three problems

The urgency of these three series of problems is such that theory has been outdistanced by practice. The drawing up of a coherent development policy nevertheless requires a graded scale of priorities and, consequently, a general method which allows the various objectives to be compared and integrated. To reserve for economic planning the privelege of a scientific method while leaving social objectives to arbitrary decisions would constitute a source of waste and a dangerous duality of purposes. The technical and political fields should not be mutually exclusive but should complement one another.

Thanks to the research undertaken in the three fields mentioned above, it is already possible to foresee the feasibility of utilising planning techniques, if not of developing a general

theory on the development of human resources (which should include, in particular, health, factors of micro- and macro-economic organisation, research, etc.).

The development and specialisation of each branch of the social sciences have tended to create isolated fields. In each of these fields, however, new and converging lines of research are being undertaken. To develop individual aptitudes and encourage social change no longer appear as the sole object of education; it also aims now at preparing future workers to play an active part in economic development. In modern methods of training manpower increasing importance is given to general education and to the development of intellectual faculties of adjustment and creation; endeavours are made to guide the mobilisation of labour along lines of productive employment which can be integrated in development planning.

The steps which enable these three social objectives to be integrated in economic development planning are described below.

7. The relationship between educational planning and economic planning can be considered under three main aspects:

(a) The total financing of an educational plan must be compatible with the financial resources of the country. In most national and regional plans the educational aims are established before estimating the cost. Increased attendance and improved quality are simultaneously aimed at, by applying desirable standards whose cost is far above present costs; in the case of comprehensive plans which are not limited to a partial sector of education (such as school-building or primary education, etc.), the extent of the sums required is such that they are always reduced during the implementation of the plan, thereby entailing a constant and improvised revision of the aims - something which is incompatible with the notion of planning and which destroys the coherence of the plan's estimates and the graded scale of priorities. These shortcomings in method are less serious in industrial countries since they are in a position to achieve the objectives desired by allocating, should they so decide, the necessary funds for this purpose without harming economic growth.

(b) The priorities of the educational plan must be harmonised with those of the economic plan. The basic choices made in respect of the development plan involve a reorientation of the educational system, affecting both the various grades and branches of education and their nature.

The objectives of industrial development can only be achieved if labour has received the necessary training in sufficient time to make proper use of the capital equipment. Means should be provided in agricultural development programmes to specify requirements in terms of rural welfare workers, assistant instructors and agricultural technicians. The regions where priority is to be given to efforts towards economic development are those where priority will also be given to the

development of basic school facilities, etc.

(c) The educational plan must be based on a forecast of labour requirements, which can be ascertained from the aims of the educational plan. This forecast must be made on a long-term basis in view of the time required for training; moreover, it must be capable of expression in terms of the educational objectives.

From this point of view, education may be regarded as an investment or rather, to be more precise, as an infrastructure expenditure for which it is possible to determine the cost and whose figure is fixed not only in relation to the potential of the economy but also to production targets, labour requirements and, to a certain extent, targets in respect of full employment.

Data which can be measured will now be indicated, with a view to defining a common method for dealing with these various aspects from the standpoint of planning.

8. Financing of education

The limits with respect to the financing of an educational plan should be established on drawing up the plan rather than during the final phase. The present level of total educational expenditure should also be established (both public and private expenditure, the latter admitting of estimates, as well as training expenses borne by other ministries, provinces and muncipalities). This figure can then be compared to the gross national product, to the total net investments and to the total public expenditure for the same year; this, in turn, makes it possible to compare these figures to those of other countries. For projections account is taken of prospects for increases in the gross national product, the public expenditure and the investment which have been assumed in making the economic plan. It is then possible to make an estimate envisaging a low rate of growth (identical to that of the gross national product or public expenditure) and another envisaging a high rate of growth (greater increase in educational expenditure, an annual increase of 10 per cent. representing the maximum in an average period). The figures for investment and increased operational expenditure (the latter being linked with the former by a more or less constant coefficient) must fall within these extreme limits according to the degree of priority allocated by the government to education; it will thus be possible from the outset to select alternatives and to set stages of progress based on a realistic viewpoint and not on an unattainable ideal.

It would also be desirable to measure the development of educational investments during recent years; such an estimate in constant prices presupposes the establishment of a deflation index peculiar to education.

The entire educational system at present can be represented by a pyramidal diagram showing the age groups from five to 25 years of age and the enrolled pupils according to the grade and branch of education. The educational system at the end of the

period covered by the plan can be represented in the same way, together with the relationship between the grades and branches of education corresponding to the objectives of the economic plan. A simple comparison of the two charts will show what discrepancies must be corrected, what sectors must be developed first and what educational reforms must be introduced.

9. Estimate of labour requirements

Difficult problems arise in estimating labour requirements, especially with respect to adopting a method of labour classification that can be linked with long-term economic estimates and educational plans. Employment statistics, even when drawn up in accordance with international standards (I.S.C.O.), are designed to illustrate the nature of trades (some 1,300), thus making it possible not only to adjust supply to demand but also to make short-term estimates. However, this method is both too complicated and too accurate to be practicable for long-term estimating purposes.

On the basis of the experience of a number of countries (France, Italy, Nigeria, etc.), it is proposed that a method of classification be used based on the individual level of education (measured in terms of the number of years spent studying) and not on the type of trade. This implies that there is some kind of balance between occupational skill or qualifications and the actual degree of education received, disregarding the distinction between general and specialised education as well as between education as an item of consumption and as an investment. Research conducted in various countries has revealed that there are different levels of training which correspond to varying degrees of education, though the scale of reckoning differs from one country to the next.

The principal stages in preparing such an estimate are as follows:

(a) Evaluation of the existing active population expressed by t_o, including the unemployed and under-employed. Distinctions can be made in this evaluation as to age groups and sexes.

(b) Distribution of the active population expressed by t_o according to the economic sectors and, within each sector, according to the level of training.

The fields of activity selected will be the same as those covered in the national accounts. Failing such accounts, a classification divided into a few principal fields such as agriculture, mining, industry, building, transport, public administration, etc., will suffice. Whenever possible it will be advantageous to distinguish between traditional and modern sub-sectors, since training requirements may often differ between them.

At each level of training workers possessing the required degree of theoretical education are to be distinguished from those holding posts at that level without the required degree of education.

According to available statistics there are four to six different levels of training.

(c) Evaluation, in the same way, of the available active population expressed by t_n, taking into account the natural shift in the population and the balance of emigration and immigration. The figure thus obtained is corrected in relation to structural or contingency factors such as the compulsory or voluntary extension of the period of education, the size of the female working population, average age of retirement, etc.

(d) Use of economic projections as concerns the output of the various sectors in added value and the increase in the productivity of these sectors.

(e) the rate of increase in productivity will determine the total volume of labour required in each sector, according to the following formula:

$$L_n = L_o \frac{O}{P}$$

in which L_n = the number of workers in the sector in t_n

L_o = " " " " " " " " t_o

O = the index of variation in output from t_o to t_n

P " " " " " " productivity from t_o to t_n

(f) The main problem consists in estimating the trend in the distribution of skills in each sector. Various methods may be used for this:

- Extrapolation of past tendencies. This method is hardly satisfactory, not only because productivity may grow at a very rapid pace in underdeveloped countries but also, in view of the existence of considerable deficits, because the situation serving as a point of departure is anything but ideal. On the other hand, the departure of foreign technicians can produce a temporary drop in present productivity.

- International comparison. Country A wishes to attain in t_n the level of country B in t_o. Let us assume that the distribution of skills in A in t_n is the same as that of B in t_o. This method is also problematical in that available statistics, as a rule, do not show clear-cut tendencies, owing no doubt to differences in definitions, although another reason is that certain modern fields of activity require from the outset an equal distribution of skills irrespective of the average level of development of the economy.

- Another method is direct investigation by teams composed of economists, teachers, employers and workers. First the type of investment (high or low capital intensiveness) in each sector is determined and then the various levels of skills required.

In underdeveloped countries where capital is scarce, the optimum relationship between output and capital must be taken as the principal criterion to be applied. On a short-term basis this may mean that fewer jobs are created, but on a medium or long-term basis the rise in production brings about the highest possible level of employment.

Obviously the distribution of skills is not identical in all sectors. Where production techniques already exist, this distribution may be determined by surveys carried out among firms; where new techniques are to be introduced, it will be based on average undertakings in the industrialised country where such techniques originate.

All these methods should be simultaneously employed, so that they may serve as a basis for reasoned hypotheses which take all the results into account, so long as there are no long-term economic forecasting techniques which enable a more exact estimate to be made of the trend of productivity over extended periods.

10. Expressing labour requirements in terms of the educational plan.

Thus, we have two series of pyramids representing the entire active population in t_o and t_n, distributed according to levels of training (the former representing the present situation and the latter the situation aimed at) and according to fields of activity. The transition from one stage to the other raises a problem that must be solved by the educational plan in terms of continuous flow, i.e., of the yearly output of graduates. Various sub-groups may be distinguished at each level. The annual number of pupils to be taught at the six different levels can then be determined, taking into account the time required to modify the annual output of graduates.

Estimates in respect of specialised types of education (engineers, doctors, technicians; technical, agricultural and vocational training) will be made for the same number of sub-groups as specified in the preceding phase. Also, the need to replace that fraction of the labour force which ceases to be active owing to retirement or death must be taken into account. This annual rate of replacement (which varies more or less inversely with the average duration of active life) may vary slightly according to the levels of education. The gross increase of labour during the period is thus obtained, which indicates the number of pupils to be taught at the various levels.

In sectorial estimates account must also be taken of a "shift rate" applying to trained specialists who transfer to other employment, such as teachers who enter the government, engineers holding administrative posts, etc. Such shifts are cancelled out at the national level unless international movements are taken into consideration (importation and exportation of labour).

In order to express the output of graduates in terms of pupils to be taught at each level of studies, parameters must be introduced which take account of two qualitative factors in eduation, namely:

(a) the number of pupils who do not complete their courses, which can be expressed by a "single rate" for each full course of studies: the relation between the number of pupils enrolled in the first year of studies and the number who finish the total course or, if account is taken of examination results, those who finish with satisfactory marks;

(b) the number of pupils who repeat courses, which can be expressed by a single parameter for each course of studies showing the average time that training actually lasts instead of the prescribed duration: for example, seven years for completing six grades of studies.

The same methods can be applied to the estimates by sub-groups. Account must be taken of those persons, mainly women, who have received training but who will not become part of the active population. Rates of activity can be calculated with respect to these sub-groups.

The number of teachers required can then be estimated, by applying the ratio between teachers and pupils to the total number of persons to be taught at each level or in each sub-group. The impossibility of developing the educational system at a sufficiently rapid pace to meet the labour supply expected in t_n may emerge from such a comparison. If the total active population in t_n (the sum of the six levels) is determined mainly by demographic growth, labour supply at a given level may increase much faster; this can take place only through a more proportional increase in the annual output of graduates, an increase which varies, besides, according to the duration of the period covered by the plan. Owing to the fact that training periods cannot be reduced, the effect of this speedy growth is to impose limits on educational efforts and may lead to the need for revision of the original objectives or their extension over a greater period of time. In any case, however, most of these parameters admit of flexibility and can be considered as variables.

Thus, the number of pupils who repeat or fail to finish courses and the number who fail examinations can be reduced by improving the efficiency of the educational system. This, in turn, can be accomplished by ensuring that teachers are better qualified, by reducing the number of pupils per class, by improving school equipment and teaching techniques - all of which entails an increase in the average cost per pupil. Such an increase is justified so long as it reduces the cost of the trained pupil. This balance between the quantity and quality of education can be expressed in optimum terms if the extent of each of the causes of insufficiency can be assessed as well as the cost and effectiveness of the means for remedying them.

At the same time incentives can be envisaged for lengthening the average length of active life, raising rates of activity, lowering "shift" rates, encouraging advancement of adult workers, etc.

A problem concerning the allocation of human resources arises when the attempt is made to attain the maximum development of education at the same time as maximum economic development. Both types are limited by the pace at which new workers enter active life. An optimum balance between these two needs can be found by establishing a model of two fields - the teaching field and the non-teaching field. The temporary need for foreign teachers or technicians, or both, can also be estimated.

11. The problem of full employment

The problem of full employment can be approached from the viewpoint of training. Mobilisation of under-employed labour can be utilised for productive occupations if a sufficient source of supervisory staff for that manpower is available. If there is insufficient supervisory staff, uneducated and unskilled workers can only be employed in elementary jobs such as road work and navvying. But a sufficient number of technicians, foremen, skilled and semi-skilled workers can serve as supervisory staff for those same workers and thus enable them to perform more complex and productive work capable of furthering the objectives of the economic plan. Techniques requiring little outlay and considerable manpower could be studied from the standpoint of supervisory staff requirements, the training of these supervisors thus serving to multiply the number of jobs. Training ten skilled workers would enable a much greater number of unskilled workers to be employed in productive work.

In agriculture, development programmes are held up more by the lack of supervisors than by technical factors or limited resources. Standards can be worked out which specify the number of agricultural technicians, assistant instructors and rural welfare workers required to supervise farming units.

In this way the productivity of the traditional sector can be raised to the point where it becomes possible to integrate the work achieved by these labour intensive methods in the development plan.

Conclusion

We have seen how the three objectives of education, manpower training and full employment, in utilising similar techniques, can be considered as interdependent and linked with the economic development plan. Education, in being regarded as the development of human resources, can be considered from the standpoint of labour supply, in that young persons on completing their training appear on the employment market, and from the standpoint of labour demand, in the sense that the quantitative and qualitative labour requirements determined

by the economy must be met by the educational system. The problem to be solved through programming or planning consists in finding a balance between this supply and demand while at the same time ensuring full employment.

Considered as supply, education first presents itself to individuals as a desire for acquiring instruction, which springs not only from the concern to prepare oneself for working life but also from social factors (the prestige involved in certain types of education or certain trades) and cultural ones (the satisfying of non-monetary needs). This aspect of education, as an item of consumption, acquires greater importance as the standard of living increases.

Secondly, education must meet labour demand. This cannot be analysed in the same way as the demand for material goods, since many factors are involved: the labour requirements of an economy at a given level and time, which are revealed by shortages and pressures on the labour market; the future requirements of economic development which are not yet felt; the extent to which demand depends on supply in the sense that trained men are able, in certain conditions, to create their own openings when highly qualified cadres raise the technical level of the economy or when skilled labour attracts foreign capital and opens up possibilities for productive investments; the development of education helps to increase the ability to absorb capital.

The attempt here has been made to show how the scope and nature of the minimum effort required in the field of education to achieve a given rate of economic growth can be assessed. The use of these estimating techniques obviously raises other difficult problems that have not been dealt with here, such as the development of the technical level and productivity over an extended period of time, the confusion between aspects of labour supply and demand, etc. But an even more difficult stage must be passed through if education is to be dealt with not only in terms of minimum but of optimum requirements. This presupposes that the social return on education can be gauged in the same manner that the return on investment is measured with the help of the capital coefficient.

It would then be possible to estimate the amount of investment in personnel training required to achieve a given objective of growth in optimum (and no longer minimal) conditions. Research carried out on economic growth has caused the "third factor" to appear as a residue including improvement in the level of education as well as in that of health, technical advance, research, management, etc. It is now possible to assess quantitatively the educational stock of the active population according to the public and private expenditures[1] required for training. In this way it is possible to isolate one of the

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[1]Provided that only real costs of education are taken into account and not forfeiture of earnings.

components of the
"third factor", to measure the return on training and introduce it in the economic estimate.

In each case, it will now be necessary to gather the statistical data essential for educational planning and estimates of labour requirements. Such data should be standardised at the international level so that comparisons may be made between countries. Two important advances can be made in this field.

The first would be to specify, in the total figures for each class, the number of pupils repeating courses, thus making it possible to introduce qualitative factors into educational planning. The second would consist in completing census taking and industrial surveys by including a question as to the number of years spent in study or better still, in accordance with the international recommendation of UNESCO, requiring an indication of the type of studies undertaken during the previous year; this would make it possible to classify the working population according to levels of training and to assess the educational stock of the active population.

Notable strides have been made in recent years to improve the statistical data required for drawing up and improving national accounts in many countries. A similar effort should now be undertaken by developing countries, research institutes and international organisations to collect the data required for social accounting, which is as important as that concerning material goods. This would constitute an important step towards a broader concept of development planning.

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